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processes on each ramus of the mandible; the cervical vertebræ flat; the femur without a third trochanter; and an additional toe in each foot.

Among the features which this group shares with the *Proboscidea* may be mentioned: the superior extension of the condylar ridge of the humerus; the short thick toes; and the late union of the epiphyses with the centra of the vertebræ. The last character appears to belong especially to mammals of very large size, and probably indicates late maturity, and great longevity.

The preceding description makes it evident that the *Brontotheridæ* constitute a very distinct family of the *Perissodactyla*. While retaining some prominent features of their Eocene predecessors, the *Dinocerata*, they are more nearly related to the Rhinoceros family, and at the same time they have some characters allying them to the *Proboscidea*, which replace them in the succeeding, Pliocene period.

All the known remains of the *Brontotheridæ* are from east of the Rocky Mountains, in the Miocene beds of Dakota, Nebraska, Wyoming and Colorado. The specimens here described are mainly from localities in the "Bad Lands" of Colorado, which were discovered and explored by the writer in the summer of 1870.*

EXPLANATION OF PLATES.

- Plate i. *Brontotherium ingens* Marsh. Side view. One-sixth natural size.
 Plate ii. *Brontotherium ingens* Marsh. Top view. One-sixth natural size.

ORNITHOLOGICAL NOTES FROM THE SOUTH.

BY C. HART MERRIAM.

II. FLORIDA.

As I was in Florida but a few days and travelling most of the time, few opportunities were afforded for taking satisfactory notes relative to the breeding habits, etc., of many of the birds observed there. The route followed was up the St. John's river to Palatka and thence up its largest tributary, the Ocklawaha river, for a

* Amer. Jour. Sci. vol. i, p. 292, Sept., 1870.

distance of two hundred and seventy-five miles, to a place called "Okahumkee," at the head of navigation.

For the first hundred and fifty miles the country on each side of the river is thickly wooded, the forests consisting mainly of cypress and palmetto trees: the undergrowth is very dense, and, together with the long and numerous prickly vines, forms an almost impenetrable jungle. To make matters still worse for the collector, nearly the whole country is an immense swamp, and it is very seldom that you see a little knoll rise above the level of the surrounding *débris*. This is, of course, the home of innumerable birds and a comparative paradise for the ornithologist.

For the remaining hundred and twenty-five miles the river runs through a vast and almost unbroken savanna: here it widens into two good sized lakes, known as lakes Griffen and Harris. A cypress or live oak is occasionally met with on this part of the river; if so, its branches (like those of the other forest trees) are adorned with large quantities of parasitic moss (*Tillandsia usneoides*), which hangs in graceful festoons to the water's edge.

Several miles back from the river (and often not so far) dry land rises out of the water and is covered with pine trees. Alligators are quite numerous about the river, both in the wooded portions and in the savannas.

The following is a list of birds met with during this excursion:

- Planesticus migratorius* Baird (Common Robin). Not very common. A few seen about the St. John's river. Probably breeds.
- Mimus polyglottus* Boie (Mocking Bird). Very common about the St. John's river and at Okahumkee. Breeds.
- Lophophanes bicolor* Bonap. (Tufted Titmouse). Quite common at Green Cove Spring, about the Ocklawaha and at Okahumkee.
- Sitta pusilla* Latham (Brown-headed Nuthatch). Very common at Green Cove Spring, on the St. John's; also quite numerous at Okahumkee. Gregarious. They seemed to be confined almost exclusively to the pine swamps and barrens, where I have often seen them moving about in flocks of from twenty to fifty. They must breed very early as I obtained the full grown young on the 15th of April. The young of the year differs materially from the adult in having the crown of the same color as the rest of the upper parts instead of brown; the white spot on the nape is also very indistinct. Their note is very peculiar and is entirely different from that of any of the other nuthatches. In habits, they resemble the pine finch (*Chrysomitris pinus*), in climbing about among the long pine leaves and alighting on and picking at the large cones. They also resemble the other nuthatches in creeping over the limbs and trees.
- Thryothorus ludovicianus* Bonap. (Great Carolina Wren). Not uncommon at Jacksonville; also seen at Okahumkee. Breeds.
- Mniotilta varia* Vieill. (Black and White Creeper). Not common about the St. John's and on the Ocklawaha.
- Parula Americana* Bonap. (Blue Yellow-backed Warbler). Common about the Ocklawaha.

- Protonotaria citræa* Baird (Prothonotary Warbler). Quite numerous in the large densely wooded swamps of the lower Ocklawaha.
- Geothlypis trichas* Cab. (Maryland Yellow-throat). Common about the St. John's and the lower Ocklawaha.
- Dendroica caerulescens* Baird (Black-throated Blue Warbler). Common on the lower Ocklawaha.
- Dendroica pinus* Baird (Pine-creeping Warbler). Common at Green Cove Spring and at Okahumkee. Breeds early; fully-fledged young obtained on the 15th of April.
- Dendroica discolor* Baird (Prairie Warbler). Common at Green Cove Spring.
- Setophaga ruticilla* Sw. (American Redstart). Common on lower Ocklawaha.
- Hirundo horreorum* Barton (Barn Swallow). A few seen about the St. John's.
- Stelgidopteryx serripennis* Baird (Rough-winged Swallow). Not uncommon about the St. John's.
- Vireo olivaceus* Vieill. (Red-eyed Vireo). Common at Okahumkee.
- Collurio Ludovicianus* Baird (Loggerhead Shrike). Quite common about the St. John's and at Okahumkee. Breeds. Its note is not unlike that of the Mocking Bird (*Mimus polyglottus*) and it is familiarly known by the natives as the Loggerhead Mocker. It can also imitate many other birds. They are most numerous in the undergrowth (when there is any) in the pine regions, and I never saw one in the swamps.
- Pyrranga æstiva* Vieill. (Vermilion Tanager; Summer Red Bird). Observed only at Okahumkee, where it was not uncommon. It was a shy bird and was generally detected by its pleasant song, and was usually observed in the top of some pine.
- Pooecetes gramineus* Baird (Grass Finch; Bay-winged Bunting). Not uncommon about the St. John's and at Okahumkee.
- Junco hyemalis* Sclat. (Black or Common Snowbird). Observed at Green Cove Spring.
- Spizella socialis* Bonap. (Chipping Sparrow). Common at Green Cove Spring and at Okahumkee.
- Melospiza melodia* Baird (Song Sparrow). Common on the St. John's.
- Cardinalis Virginianus* Bonap. (Cardinal Grosbeak). Very common all about the St. John's and Ocklawaha. Breeds.
- Pipilo erythrophthalmus*, var. *Alleni* Coues (White-eyed Chewink). Very common about the St. John's and Ocklawaha, also Okahumkee. Breeds.
- Agelaius phoeniceus* Vieill. (Red-winged Blackbird). Common in the large marshes on the upper Ocklawaha. Breeds.
- Sturnella magna* Sw. (Meadow Lark). Common about Okahumkee.
- Quiscalus major* Vieill. (Boat-tailed Grackle). Very numerous about the large savannas of the upper Ocklawaha. Several were seen on their nests from the boat.
- Corvus ossifragus* Wilson (Fish Crow). Common on the St. John's and Ocklawaha.
- Cyanura cristata* Swainson (Blue Jay). Common about the St. John's and at Okahumkee. Breeds. It differs very considerably from our northern blue jay in being much smaller and somewhat darker. The secondaries and tertials, instead of being "broadly tipped with white," are narrowly tipped with it and on some of the secondaries the white is scarcely perceptible: the white band on the tip of the tail is also much narrower and almost disappears on the fourth and fifth feathers. The black bands on the wings and tail are much narrower and on the tail are much less distinct and do not reach the shafts of the feathers. I will now give the comparative measurements of a Florida specimen and one from northern New York (Lewis Co.).

Locality.	Date.	Age and Sex.	Length.	Extent.	Wing.	Tail.
Leyden, New York.	Dec. 25, 1872.	♂ ad.	12.50	—	5.55	5.80
Okahumkee, Florida.	Apr. 18, 1873.	♂ ad.	10.50	15.50	4.90	4.76

As before stated I obtained four blue jays at Aiken, South Carolina. Three of them were nearly as large as our northern bird, and, in markings, resembled it more

- than the Florida specimen. The fourth specimen, however, was marked much like the Florida one and its measurements are nearly the same; they are as follows:—length 10.75; extent 15.25; wing 4.90; tail 5.00.
- Myiarchus crinitus* Cab. (Great Crested Flycatcher). Very abundant at Green Cove Spring and at Okahumkee.
- Ceryle alcyon* Boie (Belted Kingfisher). Common on the St. John's.
- Antrostomus Carolinensis* Gould (Chuck-will's-widow). Common on the Ocklawaha and at Okahumkee. Breeds. Strictly a nocturnal species. Roosts on the ground during the daytime.
- Chordeiles popetue* Baird (Night-hawk). Very common about the St. John's and Ocklawaha. Breeds. Fifty or more often seen at once about the boat in the evening.
- Trochilus colubris* Linn. (Humming Bird). Very abundant at Okahumkee. Breeds.
- Campephilus principalis* Gray (Ivory-billed Woodpecker). Rare about the St. John's and Ocklawaha. Breeds.
- Picus villosus*, var. *Auduboni* —. (Hairy Woodpecker). Abundant on the St. John's and Ocklawaha. Breeds.
- Picus borealis* Vieill. (Red-cockaded Woodpecker). Common at Green Cove Spring and at Okahumkee. Breeds. In habits resembles *P. villosus*. Has a decided partiality for pine swamps and barrens.
- Sphyrapicus varius* Baird (Yellow-bellied Woodpecker). Common on the St. John's and Ocklawaha. Breeds.
- Hylotomus pileatus* Baird (Cock of the Woods). Very numerous about the St. John's and Ocklawaha. Breeds. Confined chiefly to the thick hummocks and swamps. Noisy bird.
- Centurus Carolinus* Bonap. (Red-bellied Woodpecker). Very common at Okahumkee. Breeds. Inhabits both the pine barrens and the swampy hummocks.
- Melanerpes erythrocephalus* Sw. (Red-headed Woodpecker). Common at Okahumkee. Breeds.
- Colaptes auratus* Sw. (Yellow-shafted Flicker; Yaffle). Common on the St. John's and at Okahumkee. Breeds. Differs perceptibly from our northern bird in being smaller and darker. Its dimensions are as follows:—wing 5.75; tail 4.30. The measurements of a specimen from northern New York (Leyden, Lewis Co.) are:—wing 6.50; tail 5.13.
- Conurus Carolinensis* Kuhl. (Parakeet). Common on the upper St. John's and on the Ocklawaha. Breeds. Gregarious. Roosts in hollow trees. Large flocks of them are often captured by finding a large hollow tree in which they roost and cutting it down after nightfall. They are very noisy birds and if a flock is anywhere in the neighborhood you are sure to hear them.
- Strix pratensis* Bonap. (Barn Owl). Common about the Ocklawaha. Breeds.
- Syrnium nebulosum* Gray (Barred Owl). Common on the lower Ocklawaha. Breeds.
- Haliaeetus leucocephalus* Savigny (Bald Eagle). One seen sailing over the St. John's. Breeds.
- Pandion Carolinensis* Bonap. (Osprey; Fish Hawk). Common about the St. John's and Ocklawaha. Breeds.
- Hypotriorchis columbarius* Gray (Pigeon Hawk). Not uncommon about the St. John's.
- Tinnunculus sparverius* Vieill. (Sparrow Hawk). Common on the St. John's and Ocklawaha. Breeds.
- Buteo (borealis?)* Vieill. (Red-tailed Hawk). Several *Buteos* were seen about the Ocklawaha, probably *B. borealis*.
- Nauclerus forficatus* Ridgway (Swallow-tailed Kite). Common about the St. John's and Ocklawaha. Breeds. The power of wing exhibited by this magnificent bird is truly wonderful. Its rapid flight and abrupt turnings can only be compared to those of the swallow. I have often seen them dart down and pick a wasp's nest from a leaf on the top of some high palmetto and fly off with it, devouring the grubs it contained while on the wing.
- Cathartes aura* Illig. (Turkey Buzzard). Common on St. John's & Ocklawaha. Breeds.
- Cathartes atratus* Lesson (Black Vulture). Very common on the St. John's and Ocklawaha. Breeds. Much more plentiful in Florida than *C. aura*. I have seen at once on a dead tree twenty-four of these birds and two turkey buzzards.

- Zenædura Carolinensis* Bonap. (Common Turtle Dove). Common about the St. John's and Ocklawaha. Breeds.
- Chamæpeleia passerina* Sw. (Ground Dove). This miniature Dove was quite common about the St. John's. Breeds.
- Meleagris gallopavo* Linn. (Wild Turkey). Common in the thick hummocks on the upper St. John's and Ocklawaha. Breeds.
- Ortyx Virginianus*, var. *Floridanus* Coues (Florida Quail). Common about the St. John's and at Okahumkee. Breeds.
- Grus Canadensis* Temm. (Sand-hill Crane). Common on the Ocklawaha.
- Aramus giganteus* Baird (Crying Bird; Limpkin). Common on the Ocklawaha. Breeds. Limpkins are very noisy birds; they would sit on a limb over the water and scold at us as the boat passed by. They were breeding and I noticed several females sitting on their nests as we passed; they were placed in the fork of some tree, or at the junction of some limb with the trunk, generally about eight feet above the ground (or water), and were constructed rudely of sticks, measuring externally about eighteen inches in diameter by ten deep.
- Demigretta Ludoviciana* Baird (Louisiana Egret). Not uncommon on the Ocklawaha. Breeds.
- Garzetta candidissima* Bonap. (Snowy Egret). Common on the upper Ocklawaha. These beautiful birds were often seen in flocks of from ten to fifty, together with the white herons (*Herodias egretta*) and water turkeys (*Plotus ankinga*). They all breed together in the bushes that cover some parts of the large savannas, and construct rude nests of sticks.
- Herodias egretta* Gray (White Heron). Common on the upper Ocklawaha. Breeds.
- Ardea herodias* Linn. (Great Blue Heron). Common on St. John's and Ocklawaha. Breeds.
- Florida cærulea* Baird (Blue Heron). Common on the upper Ocklawaha. I obtained one nest of this bird at Okahumkee; it was built carelessly of sticks and was placed on some bushes about five feet above the ground. It was on a little floating island in a small pond, and contained two fresh eggs. The old birds were very shy and did not come within shooting distance.
- Ardetta exilis* Gray (Least Bittern). Common on the upper Ocklawaha. Breeds.
- Botaurus lentiginosus* Steph. (Bittern; Stake Driver). Common on upper Ocklawaha. Breeds. The natives call this bird "Scroggins."
- Butorides virescens* Bonap. (Green Heron). Common on upper Ocklawaha. Breeds.
- Nyctiardea gardeni* Baird (Night Heron). Common on upper Ocklawaha. Breeds.
- Gallinula Martinica* Lath. (Purple Gallinule). Common on the upper Ocklawaha. Breeds. These beautiful birds were very tame and would run about on the lily pads without showing any signs of fear as we approached and passed them. Natives call these birds "Blue Peters."
- Fulica Americana* Gmelin (Coot). Common on upper Ocklawaha. Breeds.
- Plotus ankinga* Linn. (Water Turkey; Snake Bird). Common on Ocklawaha. These curious birds, though unexcelled swimmers and divers, are generally observed perched on the top of some tall tree where their long necks can be seen for some distance. As the boat approached they would fly ahead and again alight in a similar situation. We sometimes saw them swimming in the water ahead of us and as the boat neared they would sink: they must be able to remain under water for a long time, for after diving I never saw one rise again. I obtained one of their nests at Okahumkee. It was built on the same floating island as that of the blue heron (*Florida cærulea*) before described. It was composed of sticks rudely laid together on the top of a bush, about eight feet high and contained four fresh eggs. I shot the female bird on the nest.